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Fifth Annual Conference

on

Elementary Supervision

Held at Indiana University,
April 19, 1928

EDUCATION READING ROOM
2 HR RESERVE

Bureau of Coöperative Research, Indiana University School of Education

HENRY LESTER SMITH, Director

INDIANA UNIVERSITY
EDUCATION
READING ROOM

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PROGRAM OF CONFERENCE ON ELEMENTARY SUPERVISION

April 19, 1928

Morning Session, Thursday, 9:30 a.m.

E. N. Canine, Director of Supervised Teaching, Indiana State Normal School, Terre Haute, presiding.

9:30. Address of Welcome. President William Lowe Bryan, Indiana University.

9:45. Some Suggestions from a Study of Acceleration in the Elementary School. Ralph N. Tirey, Superintendent of Schools, Bloomington, Indiana.

10:15. Improving Instruction thru Systematic Testing. Gale Smith, Superintendent of Schools, Brook, Indiana.

10:45. Improving Instruction thru The Improved Curriculum. Mamie Spangler, Elementary Supervisor, Logansport, Indiana.

Afternoon Session, Thursday, 2:00 p.m.

Ralph Noyer, Dean, Ball Teachers College, Muncie, presiding.

2:00. Experimental Schools in Russia. Dr. Harold F. Clark, Professor of Education, Indiana University.

2:20. Improving the Computative Abilities of Pupils in Grades 1 to 8. Dr. John Guy Fowlkes, Professor of Education, University of Wisconsin.

2:50 Modern Methods of Teaching Handwriting. Dr. Frank N. Freeman, Professor of Educational Psychology, University of Chicago.

Evening Session, Thursday, 8:00 p.m.

H. M. Whisler, Director, Division of Teacher Training, State Department of Public Instruction, presiding.

The evening session was devoted to a Round Table discussion on the general theme, "The Inter-relations of the Elementary Supervisor and the Teachers." The program was arranged by, and was in charge of, Director Whisler of the State Department.

8:00. Address: Miss Helen Brouse, Teachers College of Indianapolis. Discussion Leader: Miss Floro Torrence, Elementary Supervisor, Indianapolis.

Some Suggestions from a Study of the Effects of Acceleration[1]

RALPH N. TIREY, Superintendent of Schools,
Bloomington, Indiana

I. Purpose of the Study

THE purpose of the study referred to in the title of this paper was to find out, if possible, the effects of acceleration (grade-skipping or double-promotion) as it has been practiced in the Bloomington (Indiana) public schools for the past twenty years. It was the hope of the author that the scope of the study might be sufficiently broad and the results might be arrived at in such a manner that they might be of some service to school administrators everywhere who are considering or are dealing with the problem of grade-skipping. The general purpose as stated above may be analyzed into the following specific purposes:

1. What is the effect of acceleration[2] on the pupil's educational achievement after acceleration?
2. Are the effects both desirable and undesirable?
3. What grade or grades, if any, can be skipped with the least or greatest decline in school achievement?
4. Does skipping affect the progress in all subjects or types of learning in the same way?
5. Do accelerates succeed poorly or well when they reach high school and college?
6. Is there a limit to the number of skips that a pupil may make without serious losses?
7. Does rapid advancement have any serious effects on children's health?
8. Do children who have made several skips become socially maladjusted and thereby lose valuable social training?
9. What is the relation of intelligence to acceleration?
10. What standards have teachers used as a basis for acceleration?
11. Below what intelligence level is it hazardous to accelerate?
12. May a reliable standard of prerequisites be set up for teachers' guidance?

II. The Method

After making a survey of the available records pertaining to acceleration in the Bloomington schools, it was decided to make a follow-up study of four distinct groups of pupils, as follows:

[1] This report is based on a master's thesis worked out under the direction of Professor Wendell W. Wright, of the School of Education, Indiana University, during the years 1927 and 1928. The entire thesis is on file in the Indiana University Library and the School of Education, Bloomington, Indiana.

[2] This term is used thruout the paper to refer to grade-skipping or double-promotion.

A Group—Pupils enrolled between the years 1905 and 1927 who had been accelerated and who were now out of the puplic schools. The records of 100 such pupils were found.

B Group—Pupils now[3] in the elementary grades who had skipped one or more half-grades. Pupils in this group were enrolled as follows:

6 pupils in the 2B grade
10 pupils in the 2A grade
16 pupils in the 3B grade
10 pupils in the 3A grade
13 pupils in the 4B grade
20 pupils in the 4A grade
18 pupils in the 5B grade
15 pupils in the 5A grade
16 pupils in the 6B grade
26 pupils in the 6A grade

Total—150 pupils

C Group—Junior high school pupils who had skipped one or more grades and were enrolled as follows:

34 pupils in the 7B grade
18 pupils in the 7A grade
26 pupils in the 8B grade
22 pupils in the 8A grade

Total—100 pupils

D Group—Senior high school pupils who had skipped one or more half-grades and were enrolled as follows:

20 pupils in the 9B grade
14 pupils in the 9A grade
4 pupils in the 10B grade
24 pupils in the 10A grade
7 pupils in the 11B grade
8 pupils in the 11A grade
10 pupils in the 12B grade
14 pupils in the 12A grade

Total—101 pupils

It will be seen from the above that the total number of accelerated pupils included in this study was 451.

The general method of procedure in studying these various groups of pupils was as follows:

1. Tabulated available public school data, such as date of birth, age at entrance of school, general home conditions, physical and health record, percentile intelligence ratings based on 4 or 5 group tests, all half-grades skipped, semester average scholarship marks received in each subject and general scholarship rating for all subjects, attendance

[3] All enrollments tabulated as of second semester, 1927-28.

record, results of achievement tests taken by pupils during the years 1926-27 and the first semester of 1928, and other data of a miscellaneous nature.

2. The records made by all of the A group of pupils who attended Indiana University after leaving high school (45 in number) were secured from the registrar's office, and any available data bearing on the success and position in the community of this group of pupils after leaving school and the University were secured.

3. The data referred to above were used to attempt to solve the 12 specific problems mentioned above. These data were worked up into 13 tables and 10 figures.

4. Scholastic marks and standardized test scores made after acceleration, together with the judgments of 140 teachers, were used to determine the success of the accelerated pupils. In every case possible these measures were compared with the same kinds of ratings for the regular Bloomington distribution of non-accelerated pupils.

5. Health records, medical examinations, and teachers' and parents' judgments were used to discover the possible effects upon pupils' health of rapid advancement.

6. Accelerates participation in the various social and extra-curricular activities of their respective groups was checked to determine to what extent they may be socially maladjusted.

III. Brief Summary of Results

1. In general, the pupils with highest intelligence percentiles succeeded better after acceleration in their school work than those with lower percentiles. Only 6.1 per cent of the pupils having percentiles of 50 or above made marks below "G."[4] It would probably be safe to say that few children, if any, with percentiles below 50 should be accelerated and not then unless there were other reasons.

2. The teachers of Bloomington do not have any fixed standard as a basis for accelerating. The most important factor that has been used, in the past, in the primary grades, is excellent reading ability. In the intermediate grades a general scholarship of "E" or better has been the dominant factor. In more recent years, since intelligence percentiles have become available, intelligence as determined by these ratings has become an important factor.

3. A re-check of the intelligence ratings of the 13 per cent of accelerates with low percentiles making high marks consistently reveals that their percentile ratings were not reliable in most cases. The re-check showed only 2 per cent, or 10 cases, below the 50 percentile. The data suggest that these 10 cases were succeeding better than the average pupil because of parental encouragement and the possession of such personal qualities as indicated by the terms "ambitious," "likable," "persevering," "anxious to please," and "coöperative." The inference is that a pupil with normal intelligence or slightly less may be ac-

[4] Marks used in the Bloomington schools are as follows: S=95 to 100; E=90 to 94; G=85 to 89; F=80 to 84; P=75 to 79; N.P.=below 75.

celerated successfully if he possesses desirable personal qualities and habits of work.

4. A comparison of the semester marks made by accelerated pupils in elementary subjects after acceleration with the marks made by all Bloomington grade children, excluding accelerates, shows a distinct advantage in favor of the accelerates—21 per cent more G's, E's, and S's. The poorest showing by the accelerates was made in geography, history, arithmetic, and writing in the order named. The best showing was in spelling and reading. In the primary grades the subjects suffering the least decline after acceleration were spelling, arithmetic, and writing; in the intermediate grades the order was spelling, reading, writing, arithmetic, history, and geography. A slight slump was suffered by accelerates in the first semester after double-promotion, which was overcome by the end of the next semester.

5. As measured by the results of standardized tests, the accelerates made a better record than the non-accelerate Bloomington pupils and in practically all cases were above the standards developed for the tests. These results are especially significant as all of the tests were given and scored before the study was begun and therefore were free from any possible prejudice for or against acceleration.

6. The effect of acceleration on scholastic progress as measured by teachers' judgments accords in general with the results obtained by the use of teachers' marks and standardized tests, there being 183 favorable responses to 126 unfavorable. These results are not considered decisive but have some value in connection with the other data.

7. A comparison of high school marks received by accelerates and non-accelerates shows an advantage in favor of the accelerates in every subject. The accelerates made the poorest showing in mathematics and foreign language. The best record was in the fine arts.

8. A study of the high school honor rolls, containing the names of all pupils who maintain a standard of 90 or better in all subjects, reveals the interesting fact that 10 per cent of the accelerates make the honor roll as opposed to 3.2 per cent of non-accelerates.

9. Of the Junior High School accelerates, 95 per cent were found in the higher half of the ability sections. These ability groupings were determined by the Otis Classification Test and past school achievement.

10. Approximately 77 per cent of the accelerates skipped one half-grade; 14 per cent skipped two half-grades; about 5 per cent, three half-grades; about 4 per cent, four half-grades; practically 1 per cent, five half-grades; and about .25 of 1 per cent skipped six half-grades. The pupils skipping one half-grade and three or more half-grades made the best showing; the pupils skipping two half-grades made slightly poorer records. These findings suggest that the number of grades skipped is not an important factor in influencing the future scholastic standing.

11. The economic value of grade-skipping during the last 20 years has been at least $14,000. If the records for all pupils accelerated during this time could have been found, this amount would be greatly increased.

12. Pupils have greatest difficulty in skipping the 5A, 2B, and 5B grades, in this order. They seem to skip the 1B and 4B grades with least decline in standing.

13. Out of the 100 accelerates, 45 who had left the public school entered Indiana University. Five of them graduated with high distinction. A comparison of the marks received by these accelerates with the normal distribution of marks for all students during the first semester of 1927-28 showed a distinct advantage in favor of the accelerates.

The data secured concerning the success of the accelerates after leaving school and college are scrappy and incomplete but indicate at least an average degree of success.

14. The results with reference to the effect of acceleration on pupil's health seemed to lead the writer to conclude that too many skips will likely produce bad effects in the case of pupils who are not strong physically. It is suggested that great caution be used in such cases when the number of half-grades skipped equals or exceeds four.

15. This study does not furnish any evidence to warrant the conclusion that accelerates suffer serious losses due to social maladjustment. On the other hand, it does furnish some data to show that accelerates participate rather generally in the social activities of their groups and make a better showing than non-accelerates in developing leadership among their fellows.

16. Based on the findings of this study, a safe standard for a prerequisite to grade-skipping would be:

a. A general scholarship standing of "E" or better for an entire semester.

b. An intelligence rating of at least normal.

c. Good physical condition.

IV. Interpretation of Results

It is doubtful whether the results of this study will furnish an adequate solution for all of the specific problems set up earlier in the paper. However, the writer feels that abundant evidence has been furnished to reach a reasonably satisfactory answer to the question of the effect of grade-skipping on the future scholastic progress of the Bloomington pupils. All of the different methods of measuring the scholastic progress show a distinct superiority of the accelerated pupils in scholastic attainment as compared with pupils not accelerated. In other words, if pupils not accelerated are maintaining a satisfactory standard of achievement there can be no question about the scholastic success of the accelerates. Since the repeated use of standardized tests consistently shows Bloomington elementary pupils measuring well up to the standard set up by many of our most reliable tests, it would seem safe to conclude that, in comparing the performance of the accelerates with the normal Bloomington performance, a fairly reliable standard of performance is used for a basis of comparison. It seems, also, that sufficient means of measuring the accelerates' progress in high school subjects are used to warrant the conclusion that the accelerates do a quality of work which is above the average performance. Of course the number of

cases used in the follow-up work in Indiana University is too small to warrant the conclusion that Bloomington accelerates succeed better in University work than the average student enrolled there. However, the results are strongly suggestive of that conclusion. The consistency with which teachers reported accelerates using effective and persistent working habits, together with the high scholastic standing attained, suggests that the acceleration might be the cause in part for the scholastic success. Altho the evidence is not adequate to prove that the pupils accelerated actually did better work because of acceleration, it does seem adequate to prove that they succeed better than the average distribution of pupils, and that whatever losses may be due to acceleration are not losses in academic progress.

On the question of the effect of acceleration on pupils' health, the results are not decisive. A large per cent of the accelerates were found to possess some physical ailment or defect, but this result was largely offset by the results of the physician's examination of the pupils which showed that the great majority of them had such physical defects as infected nose, bad throat, and decayed teeth, which would account for a large part of the ailments. Moreover, it is hardly possible to conceive of the bad throats, noses, and teeth as being the result of rapid promotion. The follow-up study, however, of the 16 pupils skipping four or more half-grades revealed a large percent suffering from nervousness, underweight, high pulse rate, and defective eyes. These are ailments that might properly be attributed to too much mental and academic work. All of these data taken together lead the writer to suggest that there is a possible danger to the health of some children if accelerated as much as two or more whole grades. This danger would probably not apply to children having rugged health and no physical defects.

The third major problem of this study was the effect of acceleration on social maladjustment. While the results are not as conclusive on this point as they are on the pupil's scholastic progress, they furnish some evidence, at least, to indicate that there are no serious losses to the Bloomington accelerates due to this cause. When 85 per cent of the high school accelerates, who would show signs of maladjustment if any group of pupils would, are participating with their fellows in athletics, dramatics, club work, etc., and are showing distinct signs of leadership in their respective groups, there seems little ground for suspecting that they are socially maladjusted, unless social maladjustment merely means difference in age and difference in physical development. Even if social maladjustment is the inevitable result of difference in chronological age and difference in physical development, a high school of 100 accelerates should be able to overcome these differences for the most part by proper grouping and other means of providing for individual differences. The same thing might be done by the colleges and universities for the youth who enters college at an early age.

In considering whether acceleration affects progress in all subjects in the same way, the results furnish some evidence to indicate that those bodies of learning requiring continuity and a system of coherence suffer greater declines than the others. In brief, the results are prac-

tically in accord with Morrison's statement in his recent book entitled *The Practice of Teaching in the Secondary School.*[5]

The results of this study are in accord with other studies showing that the second grade is one of the most hazardous to skip. It would be interesting to have more available experimental results to determine whether those skipping the second and fifth grades consistently show comparatively greater declines in standing.

Since there are considerable scientific data to show that the younger children of high intelligence usually fare well in comparison with the other pupils of their groups, and since the results of this study indicate that, in general, pupils with a high percentile intelligence rating do better after acceleration than those with low percentiles, it seems safe to assume that the pupil's intelligence should be a factor in considering the pupil's fitness for double-promotion. However, the pupil's actual achievement in school work seems at least as important a factor.

V. Implications and Suggestions

Many additional studies of the effect of grade-skipping are needed to answer satisfactorily all of the questions raised in this study and many others which are pertinent to the problem. Below is a list of problems growing out of this study which the writer believes are worthy of scientific study:

1. A study to determine the effect of acceleration on health, involving a large number of cases of pupils who have skipped three or more half-grades and using a more scientific technique.
2. A further study of the success of accelerates in colleges and universities in scholastic attainment and social development.
3. A study to determine just what social maladjustment means as applied to school children, in connection with a study to furnish more adequate findings on the effect of acceleration on social maladjustment.
4. A further study of the relation of the intelligence of accelerates to scholastic attainment, using the Binet Test to determine intelligence.
5. A controlled experiment to determine the comparative value of rapid advancement by enriching the curriculum and the value of rapid advancement by grade-skipping.

[5] Morrison, H. S. *The Practice of Teaching in the Secondary School* (University of Chicago Press, 1926), 583 ff.

Improving Instruction Thru Organized Testing

GALE SMITH, Superintendent of Schools, Brook, Indiana

AT the beginning of the school year of 1927-28, a definite plan for the supervision and improvement of instruction thru the use of new-type tests was introduced into the elementary and high schools at Brook, Indiana, and has been carried out during the year.

This plan consisted of two phases: first, periodic testing by the use of "home-made" practice-exercise tests; and, second, the organization and administration of the daily lesson assignment on the same plan. Lack of time has prevented the carrying out of the second phase of this plan as yet, but the first phase has progressed far enough to enable us to state some of the details of the method employed and also some of its merits.

The first phase referred to above has for its basis three foundation steps: (1) acquainting all of the teachers in the school system with new-type tests and the technique of construction, (2) practice by the teachers in the formulation of this type of test, (3) the use of such objective tests as practice exercises and for supervision.

In initiating the plan, it was found that all of the teachers were more or less familiar with new-type tests, but only a very few had had actual experience in giving them, and a fewer number yet had had experience in preparing them. The superintendent first presented some discussions of the technique of construction of such tests and suggested various possible forms. This was followed by discussions of methods of scoring and of tabulating and interpreting the results obtained. The teachers responded readily and prepared tests for use in the first and second six-weeks' examinations and at the end of the first semester. These tests were given thruout the school in the place of the old essay style of test. In order to check the suitability of the content which we were putting into the tests, and also to check their design, the semester tests were given to the pupils in five other school systems. The results from these other schools indicated that our tests were fair ones.

At the beginning of the second semester the teachers had acquired a sufficient knowledge of the technique of preparing and administering the tests and handling the results to undertake the third step of the program, that of using such tests as practice exercises, for diagnosis of weaknesses, for improvement of instruction in general, and for a guide to supervision.

Each teacher, both in the elementary school and in the high school, was asked to choose one or more subjects in which to carry out the details of the plan. The following is a partial list of the subjects selected: chemistry, United States history, home economics, seventh-grade English,

ninth-grade Latin, eleventh-grade English, sixth-grade geography, fifth-grade history, fourth-grade geography, third-grade English, second-grade language, and first-grade reading.

At the end of the second week after the beginning of the second semester, each teacher prepared and gave a test in the subjects selected, covering as completely as possible all of the work done in the class in the preceding two weeks. An endeavor was made to allow sufficient time on each test to enable nearly all of the pupils to complete it. This time limit averaged about 12 minutes per test.

The results of the tests were then carefully analyzed to show which questions were most often missed and which pupils missed them. Tables No. I and No. II show how this was done in two tests in sixth-grade geography and are illustrative of the process used in all subjects. After this information was obtained from each test, the class reviewed the questions from this test and the teacher did what individual work she had time for with the certain pupils missing the most questions. In all cases, the concentration of effort was on the questions with high frequency of error, and *every effort was made to avoid re-teaching of material on which there had been a satisfactory performance.* An arbitrary standard satisfactory performance was adopted by the teachers.

The pupils were allowed to retain their scored and corrected test sheets, but they were not told specifically which questions would be repeated. Several recitations later, the next test was given. No fixed interval between tests was established but this varied with the class, with the age of the pupils, and with the nature of the work being covered. It proved to be about 8 or 10 recitations in most classes. For the best results, this interval should be shortened so that a practice-exercise test would be given in each class at least once each week. The second test was made up of questions on material covered since the first test, plus the questions most often missed on the first one. In most instances, the repeated questions were not changed in form. The results of this test were carefully analyzed as in the first.

TABLE I—ANALYSIS OF TEST 4—SIXTH GRADE GEOGRAPHY

Question Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	No. miss.
Martha	abs	ent																			
Jean H.	X							X	X	X	X				X		X			X	8
Vernal	X				X				X	X	X	X			X						7
Gertrude	X			X	X			X	X	X			X								7
Lawrence H.	X		X		X							X					X		X		6
Lamar	X							X	X			X	X	X			X		X		8
Lawrence B	X						X	X	X		X	X				X	X		X		9
Arthaile	X		X		X	X	X	X	X	X	X		X		X		X			X	13
Virginia	X				X	X			X				X		X						6
Ralph	X			X						X	X	X			X			X		X	8
Arvilla									X				X						X		3
Bernadetta			X	X				X	X	X				X				X	X		8
James	X							X	X	X		X			X						6
Duane					X			X	X	X	X		X	X	X						8
Howard	X			X				X	X	X					X		X	X	X		9
Jean S.		X						X			X				X						4
Earl	X		X					X	X			X		X			X	X			8
Russell	X						X	X			X		X		X	X	X	X	X	X	11
Eileen									X			X							X		3
Ruth									X								X				2
Billy	X							X					X				X				4
Alfred	X							X			X				X	X			X		6
Frequency of missing	15	1	4	4	6	2	3	*14	*15	*9	*9	8	8	4	*11	3	*10	5	9	4	

Questions marked * were repeated in Test 5.

TABLE II—ANALYSIS OF TEST 5—SIXTH GRADE GEOGRAPHY

Question Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	No. miss.
Martha	X	X	....	X	....	....	....	X	X	X	X	X	....	....	....	....	....	....	....	X	9
Jean H.	X	X	....	....	....	....	....	....	X	....	....	....	X	....	....	....	X	X	X	....	7
Vernal	X	X	X	....	....	....	X	X	....	....	X	X	....	....	....	....	X	....	X	....	9
Gertrude	X	X	....	X	....	....	....	....	X	X	....	....	....	....	....	....	....	....	....	X	6
Lawrence H.	X	....	....	....	....	....	....	X	X	....	....	....	X	....	....	....	....	....	....	X	5
Lamar	....	X	....	X	....	....	....	....	....	....	X	....	....	....	....	....	....	....	....	....	3
Lawrence B	X	X	....	....	X	X	X	X	X	X	X	X	X	....	....	....	....	....	X	X	13
Arthaile	X	X	....	X	....	....	....	....	X	....	....	....	....	....	....	....	X	....	....	X	6
Jean S.	....	....	....	....	....	....	....	....	....	....	X	....	....	....	....	....	....	....	....	X	2
Howard	....	X	X	....	....	X	....	X	X	X	....	....	X	....	....	....	....	X	X	....	9
Duane	....	X	....	....	X	X	X	....	....	X	....	....	....	....	....	....	....	X	....	X	7
James	....	X	....	X	....	X	....	....	....	....	....	X	....	....	....	....	....	....	....	....	4
Bernadetta	....	X	....	X	....	....	X	....	....	....	....	X	X	....	....	....	....	....	....	X	6
Arvilla	....	X	....	X	....	....	....	....	....	X	....	....	....	....	....	....	....	....	....	X	4
Ralph	....	....	....	X	....	X	X	X	....	X	....	....	....	....	....	....	....	X	X	....	7
Virginia	....	X	X	X	....	....	....	....	....	X	....	....	....	....	....	X	X	....	X	....	7
Earl	....	X	....	....	....	....	....	....	....	X	....	X	....	....	X	X	....	....	....	....	5
Russell	X	....	....	X	....	....	....	X	X	X	....	....	X	....	....	....	....	X	X	....	8
Eileen	X	X	....	X	X	X	....	....	....	....	....	....	....	....	....	....	....	....	X	X	7
Ruth	....	X	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	X	X	3
Billy	X	X	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
Alfred	....	....	....	X	....	X	....	X	X	....	....	....	....	....	....	....	X	....	....	....	5
Frequency of missing	*10	16	*4	12	3	7	5	8	9	10	*5	*6	*6	0	*1	2	5	5	9	11	.....

Questions marked * are the ones repeated from Test 4.

The next tests were given at about the same intervals and the same procedure was followed.

For specific illustration of further details of the technique of this plan, I have chosen fourth-grade geography, sixth-grade geography, and as the method for handling is the same in high school and elementary school, have included one subject, that of United States history, from high school.

Copies of Tests 4 and 5 in sixth-grade geography are included here and the analysis of results from these tests is shown in Tables I and II. In Test 4 (Table No. I), questions 1, 8, 9, 10, 11, 15, 17, and 19 were most often missed. Questions 8, 9, 10, 11, 15, and 17 with frequencies of error of 15, 15, 99, 11, and 10 respectively, were chosen for repetition in Test 5. (See copies of Tests 4 and 5 in sixth-grade geography.) The pupil errors were reduced from 68 in Test 4 to 47 in Test 5—this is on repeated questions—or a reduction of 32 per cent. For the whole series of five tests in sixth-grade geography, the reduction in pupil errors in repeated questions was from a total of 252 pupil errors to a total of 131 pupil errors, or a reduction of 49 per cent. (See Table No. V.)

Geography, Sixth Grade Test 4

Fill in the blanks with the word or words which will make a true statement of each question.

Example: The "Bad Lands" are in western ....*North Dakota*.... and ....*South Dakota*.....

1. The making of farm implements is very important in the North Central States, for here are found: (1).....,
   (2)....., (3) .....
   [This question was not repeated in Test 5 but was incorporated in Test 6.]
2. The largest state of the "Plateau Group" is .....
3. The Wasatch Mountains are a short range, mainly in .....
4. The Grand Canyon of the Colorado is in .....
5. The Plateau States produce nearly.....of the sheep in the United States.
6. A city in Montana noted as a sheep center is .....
7. ..... is the state leading in the production of sheep.

*8. Irrigation was introduced into Utah by the ..... in the year of .....

*9. In dry farming there are four important things to do, namely:
   1. .....
   2. .....
   3. .....
   4. .....

*10. Farmers who make use of irrigation spend their time on a few acres of land in careful culture. This is called..... farming.

* The questions marked with an asterisk (*) are the ones repeated in Test 5.

Place a check mark before the word or phrase which will make a true statement of each question.

Example: The United States produces more than:
1. three-fourths
2. two-thirds
x 3. one-half
of the world's supply of copper.

*11. The two states that lead in the production of sheep are:
1. Wyoming
2. Idaho
3. Montana
4. Colorado

12. The greatest copper-producing state of the "Plateau Group" is:
1. Montana
2. Utah
3. Arizona

13. A city in Montana that yields a large amount of copper is:
1. Great Falls
2. Missoula
3. Butte

14. Most coal is produced in the Plateau States in the state of:
1. Wyoming
2. Colorado
3. New Mexico

*15. The Coeur d'Alene district in Idaho is noted for the production of:
1. silver and lead
2. coal and iron
3. gold and silver

16. The precious metals are:
1. silver and copper
2. lead and zinc
3. gold and silver

*17. Geysers are found in the state of:
1. Montana
2. Utah
3. Wyoming

18. The Louisiana Territory was purchased in:
1. 1801
2. 1807
3. 1803

19. The chief city between Denver and the Pacific coast is:
1. Los Angeles
2. Ogden
3. Salt Lake City

20. The Reclamation service was formed in 1902 for the purpose of:
1. building railroads
2. preservation of the forests
3. reclaiming more of the arid land.

Geography, Sixth Grade Test 5

Fill the blanks with the word or words which will make a true statement of each question.

Example: The Wasatch Mountains form a short range, mainly in ....*Utah*.....

1. Irrigation was introduced into Utah by the ..... in the year ..... [Question 8 repeated from Test 4]
2. In dry farming, there are four important things to do, namely:
   1. .....
   2. .....
   3. .....
   4. .....

   [Question 9 repeated from Test 4]
3. Farmers who make use of irrigation spend their time on a few acres of land in careful culture. This is called ..... farming. [Question 10 repeated from Test 4]
4. The leading industry of the Pacific States is ..... [new]
5. The Sierra Nevada Mountains extend from California through Oregon and Washington and are called the ..... [new]
6. The Mountains in Washington which are a continuation of the Coast Range are called the ..... [new]
7. The famous Crater Lake is in the state of ..... in the ..... Mountains. [new]
8. Three ports on Puget Sound in Washington are: (1)....., (2) ....., (3) ..... [new]
9. Wheat is an important crop in the ..... part of Oregon and Washington. [new]
10. The principal city in eastern Washington is..... [new]

Place a check mark before the word or phrase which will make a true statement of each question.

Example: The greatest copper producing states of the Plateau Group is:

x 1. Arizona
  2. Montana
  3. Utah

11. The two states which lead in the production of sheep are:
    1. Colorado
    2. Montana
    3. Idaho
    4. Wyoming

    [Question 11 repeated from Test 4]
12. The Coeur d'Alene district in Idaho is noted for the production of:
    1. gold and silver
    2. coal and iron
    3. silver and lead

    [Question 15 repeated from Test 4]

13. Geysers are found in the state of:
    1. Utah
    2. Montana
    3. Wyoming

    [Question 17 repeated from Test 4]
14. Alaska was at first a possession of:
    1. Spain
    2. France
    3. Russia
15. California surpasses all other states in raising:
    1. oranges
    2. grapes
    3. lemons
16. Alaska was purchased by the United States in the year:
    1. 1899
    2. 1867
    3. 1909
17. The Willamette Valley is in the state of:
    1. California
    2. Washington
    3. Oregon
18. The Yosemite Valley is a deep canyon in the:
    1. Sierra Nevada
    2. Coast Range
    3. Cascade Range
19. In the Pacific Group, Washington is the chief state in the production of:
    1. petroleum
    2. coal
    3. iron
20. The state producing more lumber than any other state in the Union is:
    1. Oregon
    2. California
    3. Washington

TABLE III—THE ANALYSIS AND MAKE-UP OF FOUR TESTS IN FOURTH GRADE GEOGRAPHY

Brook Elementary School — Miss Elizabeth Hays—Teacher

Test 1		Test 2			Test 3			Test 4		
Question number	Frequency of missing	Repeat number and new questions	Question number	Frequency of missing	Repeat number and new questions	Question number	Frequency of missing	Repeat number and new questions	Question number	Frequency of missing
1	4	22	1	1	new	1	1	18	1	6
2	3	21	2	2	new	2	1	13	2	3
3	3	20	3	1	new	3	3	14	3	3
4	1	19	4	1	new	4	3	11	4	2
5	0	18	5	0	new	5	5	new	5	6
6	2	17	6	1	new	6	8	new	6	8
7	3	15	7	6	14	7	7	new	7	8
8	7	8	8	2	15	8	2	new	8	9
9	9	new	9	7	16	9	4	new	9	9
10	0	new	10	5	new	10	12	new	10	12
11	3	13	11	3	new	11	10	new	11	6
12	8	new	12	2	new	12	3	new	12	12
13	7	new	13	2	new	13	8	new	13	4
14	10	new	14	13	new	14	9	new	14	3
15	8	new	15	6	new	15	5	10	15	4
16	1	14	16	12	9	16	1	new	16	8
17	2	new	17	11	10	17	5	6	17	2
18	2	new	18	4	12	18	5	new	18	7
19	5	new	19	5	13	19	0	new	19	3
20	11	new	20	8	14	20	10	5	20	3
21	12	new	21	12	6	21	1	new	21	6
22	12	.....	.....	.....	.....	.....	.....	new	22	7
23	.....	.....	.....	.....	.....	.....	.....	new	23	8
.....	.....	.....	.....	.....	.....	.....	.....	new	24	11
.....	.....	.....	.....	.....	.....	.....	.....	new	25	10

Table III shows the manner in which four tests, given at intervals of approximately eight recitations, in fourth-grade geography, were built up; and also the result obtained from repetition of the questions most often missed.

For example: question 13 in Test 1 was missed 7 times. This was put into Test 2 as question 11 and was missed 3 times.

Question 9 in Test 2 was missed 7 times. This was incorporated in Test 3 as question 16 and was missed by only 1 person.

An analysis of Table III shows that a total of 26 questions were repeated in Tests 2, 3, and 4. Of these repeated questions, two show a greater frequency of misses on the second trial than on the first, two show the same, and twenty-two show less.

TABLE IV

Test Number	Number pupil errors on original questions	Number pupil errors on questions repeated	Decrease in number pupil errors	Per cent of decrease
1	157	48	109	69
2	91	54	37	40
3	133	53	80	60
4	153	22	131	85
5	88	32	56	63

Table IV shows the pupil-error decrease on the repeated questions in each test of a series of six tests in United States history, and also the per cent of decrease in each test.

The value of the practice exercise has been very well established and it is growing rapidly in popularity. There are many kinds of practice exercises available, but it is the experience of the writer that teachers would rather prepare their own if they had confidence in their ability to handle the necessary technique of construction, administration and interpretation of results. These "home-made" exercises are more flexible and more adaptable to the teacher's particular group of pupils than exercises not specially prepared for certain groups.

However, there are certain limitations to be respected in carrying out a plan such as has been outlined. The first of these is the limitation of the teacher's knowledge of the mechanics of test construction. The first step of our plan was successful in decreasing this limitation. At the present time, after almost a year's experience, all of our teachers are very skillful in the construction of new-type tests. Four kinds of questions have been found to be the most adaptable: the multiple-choice (two forms), the fill-in-blank, the matching, and the true-false. The latter kind was regarded by the teachers as being the least useful. An investigation and experiment is now under way by the writer to determine the relative values of these four kinds of questions when used in the short, practice-exercise test.

Another factor to take into consideration was that of the ability

of all of the teachers to make statistical interpretation of the results of the tests. This was handled by reducing the use of statistical method to the minimum. Any teachers, regardless of the nature of their background of training and experience, could handle the method used. After the analysis charts such as shown in Table No. I and Table No. II had been made, scores were listed in order of frequency and a percentile ranking, based on scores made, was given to the pupils. These percentile standings were translated into grades, either letter or numerical, by means of a chart worked out for the teachers.

Some of the teachers began the year with belief that a test should be given for no other reason than to enable the teacher to give the pupil a grade. This is one of the purposes which the tests serve. They were designed to cover thoroly the work completed within each interval between tests. The scoring is perfectly objective and the teachers soon agreed that this type of test was superior to any other as a basis for the awarding of grades. A continued use of the practice exercise tests convinced them that the most worth-while feature, however, was their diagnostic value. They reveal specific weaknesses on the part of the pupils, and these weaknesses may be taken as indicative of weaknesses in teaching, or at least they reveal the exact location where re-teaching should be done. When the exercises are used as frequently as they should be, they compel the teacher to be prompt in re-teaching. One of the greatest benefits of the whole plan is that derived from the pupils' examination and review of the scored and corrected test sheets. This constitutes self re-teaching of the most valuable kind.

The extent to which this re-teaching functioned, or in other words, the extent to which the pupils profited by their experience in taking these tests and reviewing them later, is indicated in Table V and Table VI.

TABLE V—DECREASE IN THE NUMBER OF PUPIL ERRORS IN SERIES OF PRACTICE EXERCISE TESTS IN SEVEN SUBJECTS

Test	Number of pupil errors on original questions	Number of pupil errors on repeated questions	Decrease	Per cent of decrease
4 tests in fourth grade geography	194	87	107	55
5 tests in sixth grade geography	252	131	121	49
5 tests in fifth grade history	140	71	69	50
6 tests in United States history (H. S.)	622	209	413	66
4 tests in second grade language	373	147	226	60
3 tests in third grade English	77	46	31	40
5 tests in seventh grade English	406	239	167	41

The above table shows that the lowest per cent of decrease in the number of pupil errors on the repeated questions was 40 per cent on a series of three tests in third-grade English.

The highest per cent of decrease among the elementary school subjects was 60 per cent in a series of four tests in second-grade language.

The second highest was a decrease of 55 per cent in a four-test series in fourth-grade geography.

TABLE VI—SHOWING THE NUMBER OF CASES IN WHICH THE ERRORS DECREASED, INCREASED, OR REMAINED CONSTANT IN REPEATED QUESTIONS IN SEVEN SUBJECTS

Subject	Number of tests	Number of repeated questions	Number of times error decreased	Number of times error increased	Number of times error constant	Per cent of decrease
Fourth grade geography..	4	26	22	2	2	84
Sixth grade geography..	5	38	31	4	3	81
Fifth grade history.....	5	29	20	8	1	69
United States history (H. S.).....	6	46	41	2	3	89
Second grade language....	4	12	9	3	0	75
Third grade English.....	3	21	18	3	0	85
Seventh grade English.....	5	32	23	7	2	72

The above table shows that the lowest per cent of decrease in the number of times the error decreased in repeated questions was 60 per cent in the series of 5 tests in fifth-grade history.

The highest per cent of decrease among the elementary school subjects was 85 per cent in third-grade English. The second highest per cent of decrease was in fourth-grade geography.

Another of the outstanding merits of the plan is the opportunity which it affords for supervision of instruction. All of the practice-exercise tests are reviewed in advance by the superintendent, who, in a small school system, is charged with the entire task of supervision, and all of the results are available to him for study. Consequently, this plan furnishes an almost perfect means for the supervisor to keep in the closest touch with the work being done by the teachers.

The tests compel a teacher to organize and plan her work in the most minute detail. This feature alone would justify the use of the plan. When teachers use practice exercises not of their own composition, they may not spend as much time as they should in organizing their work. But, in order to prepare tests, a teacher must be an absolute master of the subject-matter she is teaching. Trying to prepare them without such mastery is a hopeless task.

The exercises stimulate a good spirit in the classes. This applies both to the teacher and the pupils. They keep the teacher "alive." She soon becomes anxious to improve her technique of testing and her method of harmonizing the tests with her teaching. She assumes greater responsibility in teaching than if using practice exercises and tests which are "ready-made."

The tests are in great favor with the pupils. The children look upon them as a delightful game. When the tests are scored immediately, as should be done, the pupils know at once what they have achieved. There is always a great amount of speculation as to which questions will be repeated, and this is a decided stimulus to a review of the whole test.

It has been our endeavor here to present a brief outline of our plan for improving instruction thru organized testing. This is accompanied by illustrative material. There are many aspects upon which we have not touched. The plan is not complete yet. In fact, it can never be completed, and we feel that is one of the most significant features; there will always be opportunity for growth, development, and betterment.

Improving Instruction thru an Improved Curriculum

MAMIE SPANGLER, Supervisor of Elementary Schools,
Logansport, Indiana

SUPERVISION'S most important function is the improvement of instruction in the classroom. This can be effectively done only after the supervisor and teachers have agreed upon general and specific objectives and have set up definite attainments for groups of different levels of ability. The supervisor must also obtain scientific knowledge of the strengths and weaknesses of individual teachers and pupils. Such knowledge can be secured thru scientific diagnosis obtained thru the contribution to supervision made by the measurement movement.

I believe it is unfair to discuss a teacher's work with her in terms other than her own objectives. In past experiences I have been amazed to find teachers who teach without any but vague purposes. One teacher who was not the poorest teacher in the system by any means remarked, "Objectives! Why I never thought about them."

There should be a common background for objectives and attainments for all subjects. The same ultimate aim of education should guide all teaching. The same philosophy of education is back of whatever differentiation is made. While there are many worthy aims of education from which to select I know of none more acceptable than those set forth by the Commission on the Reorganization of Secondary Education, namely: (1) health, (2) command of fundamental processes, (3) worthy home membership, (4) vocation, (5) citizenship, (6) worthy use of leisure, and (7) ethical character. In addition to these general aims, those who construct an elementary curriculum should know the purposes of elementary education. They should be alive to the fact that the elementary school is one of the most powerful forces in the world. It is in this unit of the public schools that we have "all the children of all the people." Modern civilization is democratic. This means that the ultimate control of affairs is in the hands of the people as a whole. The elementary school has a great opportunity as well as a responsibility. There are three influences within a school: the character and personality of the teacher, the pupil life, and the curriculum. The latter represents the function of the school. The elementary curriculum lays a common foundation upon which different purposes may later work toward accomplishment. Since "all the children of all the people" are to be found in the elementary school, the best knowledges and skills should make up its courses of study. There are obstacles to this goal. First, the immaturity of the pupils furnishes a handicap and, again, some things have crept into the curriculum thru various reasons and tradition has made it difficult to eliminate them. Notwith-

standing these difficulties, it is possible to construct a curriculum which will contribute not only to the child's immediate needs and interests but will meet the general aims of education. The removal of grades 7 and 8 to the junior high school resulted in a clarification of objectives for the first six grades. Some subjects cannot be completed in six years but will have to be continued for at least two additional years, therefore articulation must be provided.

When I arrived in Logansport the first of last October, I found curriculum construction to be an immediate need. There were local problems to be met. This was a fortunate situation for a new supervisor because it afforded the opportunity of working with the teachers toward selecting objectives and attainments. Nothing could more quickly bring about common understandings. Having had experience in this type of work and realizing the great task that confronted those who had had no preparation thru study or experience, I planned a simple beginning. During each six weeks of the first semester, I sent to the teachers blanks on which to record objectives, activities, and actual accomplishments. The immediate purpose of this was to get all teachers to think in terms of general and specific objectives, semester, six weeks, and daily. Furthermore, I hoped to collect a list of all activities being used and to create a greater interest in worth-while activities. My more remote purpose was to work out semester attainments for the average group hoping ultimately to enlarge upon this feeble beginning to include carefully weighed objectives, activities, and outcomes. My call for volunteer committees to work during this semester was gratifying and showed that the teachers realized the need for this step. However, the work has progressed far beyond our expectations. A curriculum class was organized and Dr. Wright of Indiana University conducted it. The members of this class made use of the materials collected from the teachers, and their work deserves high commendation. The organization was by subjects, and the courses ranged from grades 1 to 6 inclusive. As this work progressed the committee members who were not in class were familiarizing themselves with outstanding courses of study and books dealing with their special interests. The *Classroom Teacher*, a Christmas gift from our board of education, has been an invaluable aid.

The curriculum study class ended the middle of March and the courses of study are now in the hands of grade committees for the purpose of bringing about a more perfect correlation and integration of the whole subject-matter. The arrangement first by subjects has solved the problem of articulation. We are keeping in mind the continuation of the pupil's educational career after he leaves the elementary unit by having junior high school teachers attend our subject conferences and by frequent individual consultations. The work now in progress by the grade committees is concerned chiefly in arranging the subject-matter into larger units, thus preventing the isolation of subjects. Grade placement will be carefully checked and time allotments suggested. Diagnosis secured by a testing program has pointed the way for some remedial work.

It is not possible to give any detailed account of the content of our courses, but I shall refer to some of the more significant features. The reading course started with the assumption that the pre-primer work would be contributed by the kindergarten group. The introduction to reading is concerned chiefly with building up right attitudes toward reading and furnishing the child rich experiences which he will desire to express thru oral and written language. These experience stories will develop booklets which may be used as readers. We are working on the assumption that much of the present drill work can be eliminated by using vital materials, and expressive oral reading will be a natural outcome.

Desirable activities are featured thruout the grades. As an incentive to creative language expression we print a little magazine, *The Camera*, for which are selected the best from all grades and schools. Miniature homes, farms, and villages, plays and excursions form centers from which different types of learning emanate.

One of the most significant departures from the usual is the unit-fusion course in grades one, two, and three. The following is a statement and outline of the first-grade plans handed to me by the chairman, Miss Edna Grauel:

"A Unit Fusion Course is a method of placement of the social sciences and hygienic and natural sciences in the first-grade curriculum. In an extensive rather than an intensive way these subjects, all of which have as their objectives the teaching of better ways of living and of living together, will find their expression in almost every activity of the young child's school day.

"The course, as such, will not likely have a time allotment on the school program. It will find its time allotment in the language or discussion period, the reading period, the art and music periods, and the free activity periods. In outlining the activities for the course, the foregoing thought will be observed, and the correlations indicated whenever possible.

"The advantage of such a course will be in that it will set up definite objectives for each of its divisions and attainments in the nature of knowledges, appreciations and attitudes, and habits and abilities. These objectives and attainments will serve as guide posts by which the teacher can most economically direct her work.

"Tentative Outline of the Course

"I. Civics—to teach that there is a world in which folks help each other.
  1. Citizenship—
    a. Home and school relationships—
      (1) The home as basis of civilized society—
        (*a*) The members.
        (*b*) The home activities. Provisions of food, shelter, clothing.
        (*c*) How each member of the family helps.
        (*d*) Special ways in which a child can help.

(2) Responsibility, fair play, coöperation in school activities.

b. Good citizenship habits—

(1) Orderliness.

(2) Responsibility.

(3) Honesty.

(4) Truth.

2. Safety.

"II. Nature Study—to help adapt the child to his environment. The work will naturally follow the seasonal changes, will be observational, and extensive rather than intensive. It will correlate with hygiene at many points and with art, music, civics, holidays, and reading.

"III. Holidays—in accordance with the outline for holiday observance worked out last year. To give the child in the primary grades some knowledge of the traditions of our past.

"IV. Hygiene—course already prepared for us by the hygiene committee."

The objectives in the citizenship course will contain the items listed on our new report cards.

Our work will be ready for a tryout next year, and mimeographed copies of the courses will be placed in the hands of the teachers. At the same time we expect to begin the scientific construction of tests to determine scientifically the suitability of this material to the average group. Plans are already under way for the organization of an Extension class in the Construction of Tests to be taught by Dr. Wright. After the final selection of material for the average group we shall seek to take from this a course adapted to the slow group, the content of which should be practical and should afford extensive opportunity for drill. For the gifted, the course will suggest not only more difficult and more extensive material, but will offer a wider and more varied choice. All of our pupils are grouped on the basis of intelligence tests, achievement tests, and teachers' judgments.

The committees are to consider themselves permanent as long as they desire to serve. Besides keeping in touch with the work they created, they will inspect, evaluate, and recommend supplementary materials. I desire to pay tribute to the fine spirit of enthusiasm, coöperation, and judgment shown by the Logansport teachers. It has, indeed, been a privilege to work with them, and any success achieved will be theirs. I think they will agree with me that the effects to the participants have been broadening and at the same time integrating. We have common purposes, each trying to reach them by the method she deems applicable to her particular situation. The best that, in our judgment, can be found is being selected for the benefit of the boys and girls of our schools. We are proceeding deliberately, knowing that the work can never be complete because new situations are constantly arising, but feeling that we are doing something in a constructive way to meet our own problems.

Experimental Schools in Russia

HAROLD F. CLARK, Professor of Education, Indiana University

WITH all our dislike of Russian economic policy, it would be foolish not to learn from present Russia in other fields if she has aught to teach us. Many things that from our standpoint are undesirable have been tried out in Russia, but out of the trouble and violence of the last ten years one thing has been brought forth which we would doubtless call good. This one thing is the new school system.

This entire school system might well be called one vast experimental school. Someone might ask how can a whole system be experimental, and that a system covering one-sixth of the earth's surface. It is necessary to keep in mind the tremendous changes that have occurred in Russia. With the old governmental order went the old school system. It was just as easy to start on one new basis as another. Instead of being started on a private, competitive, individualistic basis the new schools were started on a community, coöperative, group basis. For that reason group activities or projects are fundamental to the system. In our intensely individualistic society there is a certain element of humor, one might almost say of pathos, in trying to carry on group projects in schools.

In Russia, there are what we might call two types of schools: first, what they call experimental schools; second, the rest of the system which, as we have seen from our standpoint, might likewise be called experimental. Whenever I had a choice of seeing what they called the experimental school or of seeing what they called the ordinary school, I chose the ordinary school.

It was my good fortune to see schools in several different sections of Russia: in Leningrad, Moscow, Kiev, Odessa, Sebastopol, Kharkov, and many smaller towns and villages. So I think my impressions are based upon a fair sample of the best Russian schools. As has been said before, from our standpoint, all these schools may legitimately be called experimental schools. This is true because all Russian schools are experimenting with a new method of education, new instructional material, and new processes of control. The old subject-matter lines have been abolished and life activities have been substituted. Outside discipline and compulsion have been abolished and in their place have been substituted coöperative and group activity. Such is the theory.

We may legitimately ask two questions: first, Why has such a change taken place? second, Has the theory been put into practice? A short description of the organization of a particular school district may make the changes easier to understand. Before we give this description we shall quote, from the official guide of the Union of the Russian Republics, a statement regarding the purpose of the schools:

"The realization of group activity, the final goal of the Russian government, can be brought about only through the widest cultural and political education, based upon the rearing of the young generation in the spirit of group activity. Thus the cultural activities in the Union of Russian Republics follow two parallel courses: first, the raising of the cultural standard of the population; second, the creating of a new cultural atmosphere opposed to that of individualism. The central control over their activities is in the hands of the Peoples Commissariats of Education (Narkompross) of the several Republics."

In order to make observations on a school district, we first called on the commissar of education. The following is essentially what we heard or later saw. The facts are in regard to a particular school district of 1,500,000 people, including a city of 500,000. After one reads the following information, it may be needless to remind him that the district is one of the best in Russia.

The school district of Kiev is located about 500 miles south of Moscow and 400 miles north of the Black Sea. The city (Kiev) is beautifully situated on the heights overlooking the Dnieper in the heart of the district. As stated before, of the 1,500,000 people in the district, about one-third live in the city.

The district is in the heart of the Ukraine, a territory of 28,000,000 people. The rural school plan for the whole Ukraine is to have a 4-year school within a radius of about 10 miles. The whole territory is divided into about 1,000 regions, and each region is supposed to have a 7-year school.

The schools are organized as follows:

Kindergarten for children from 4 to 7½.
The 4-year school for children from 7½ to 11½.
A 3-year school for children from 12 to 15.
(Sometimes there is a combined 7-year school for children from 8 to 15 to take the place of the 4- and the 3-year school.)
Pre-vocational school from 15 to 17 or 18.
Vocational schools including the Universities and technical schools for 3 or 4 years.
In this school district 34 per cent of the total governmental budget goes to education. The total expenditures for education amount to 6,500,000 rubles per year ($3,250,000).

By 1930 it is planned to have all children of school age in the district in school. At the present time (1927) there are 35 per cent more children in school than there were before the war. Ninety per cent of the 8- and 9-year old children are in school now. Of the 78,000 children from 8 to 11, 47,000 are in school. But the large number of older children raises the total in the 4-year school to 67,000. In the city of Kiev, as contrasted with the district, 90 per cent of the children from 8 to 11 are in school. This year (1927), 3,000 students will be admitted to the secondary schools.

There is a people's college in Kiev that prepares teachers for the 4- or the 7-year schools. Each institute, such as an agricultural or

engineering institute, has a teacher training section. To teach in the 4-year school the teacher must have 3 years of training in the college or institute after finishing the secondary school. To teach in the 7-year school requires 4 years of training.

The training of the teacher includes not only theoretical courses in education and in subject-matter courses, but also practical work in the schools. During the first year of the course the teacher spends some time in the schools getting acquainted with practical problems. The second year the student works as a teacher for two or three weeks. The third year the student acts as a regular teacher for one month.

When the teacher finishes his period of training he is sent to his work by the government. A list of all vacancies is kept in the capital of the Republic and the teacher is sent where he is needed. The salary is determined by the government and is virtually the same over all of the Republic. In the lower schools the teacher is paid 50 rubles ($25) per month for 96 hours' work per month. In the higher years of the school the pay is 60 rubles ($30) for 72 hours per month. Teachers may work additional hours, for which they are paid the standard rate. All salaries are paid 12 months of the year. Teachers' vacations are among the longest granted to any workers and are usually for 2 months each year. To an American, the elaborate provision for free rest homes and vacations for all workers contrasts sharply with the relatively low salaries. Some parts of the system might not be without suggestions for us in our different economic order.

At the end of 25 years the teacher can retire on a pension of 25 rubles ($12.50) per month. In case of death, a pension is paid to the family by the trade union to which all the teachers belong.

Of the 3,400 teachers in the district, 1,500 are in the city of Kiev and 1,900 in the rest of the district. Plans for the year 1927-28 call for 250 additional teachers, 210 of whom are to go outside of the city.

Probably the thing that most impresses the stranger is the method of teaching in the Russian schools. For the first 4 years the "active" or "complex" method is used. In broad outline this is similar to our problem or project method. The teachers make it very clear that they use material near the school and proceed from what the child knows.

For instance, a school in an agricultural district studies the life of the village. The elements of mathematics, geography, government, etc., are introduced only as they help the child to understand his village, its social and economic life. This is all-important to the Russian peasant as his life centers around the village, there being no isolated farms as with us.

In the last 3 years of the 7-year school the method becomes much more complicated. A theme is taken, such as exchange between the village (county) and the city. Students work on different parts of the subject and report on them. Books are indicated by the teacher but the books are not studied as such.

The Russians claim that the method is a fundamental part of their economic order. They are frank to admit the defects of the method and to give credit to other nations and peoples for developing

it. Dewey is considered as probably having contributed most to the early development of the method.

Their projects do not have the finish of those in some of our experimental schools but they seem to be more real, more a part of the life of the child and of the social order.

When the work is finished there is no examination in the ordinary sense of the term. Tests may be held occasionally, and every three months the teacher makes a report on the progress of the child. In addition, the child is supposed to make out a list of what he does.

How does this work out in actual practice? What goes on in the schoolroom? I shall quote from notes made in classrooms and from conversations with teachers. The following is what a teacher in the elementary schools told us. I picked the school and I chose the teacher; whether what is described below actually goes on in the schools you must judge for yourself.

I shall read my notes just as they were taken while talking to the teacher. The general scheme of elementary education is as follows:

"(1) A study of the home and environment of the child, including discussion of the surrounding country, surface, vegetation, climate, nationalities, folk-songs, national literature, etc. (2) Agriculture, including products, rotation of crops, etc. (3) Industries, including natural resources, number of industries, history of machines, comparison with other countries, organization of workers, and other items. (4) A study of the Union of the Russian Republics, resources, peoples, etc. Conclusions stated by the children.

"How the work is planned. (1) Teachers of one class of the city or village meet and plan projects. (2) Teachers and pupils meet and plan when to take up each subtopic. (3) Must finish four large themes and the children want more.

"Examination. (1) Teacher knows the child's work from conferences, questions, daily application. (2) Three times a year the same questions are given to all schools to ascertain the standard of the schools. (3) At the end of the term questions are asked covering one or two sections of the work.

"Method of teaching. Complex is the whole method for the first three years. Begin to introduce history in the fourth year by a study of the cultures of people leading to feudalism in Russia, finally leading to the Revolution of 1917; reading a great deal of literature on feudalism.

"The first project in September begins with the Revolution of 1917 and works back to feudalism. The group reads a great many books on feudalism working up such questions as the following: the relation between lord and serf, why the two divisions of society, are they necessary, how the Revolution of 1917 destroyed them, the difference it makes in the life of children now. Each child writes out questions, then the group gets together and discusses them. Creates social attitude.

"The group takes up statistical questions such as the amount of land to each family now and before the Revolution, the number of schoolhouses, and other items.

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"The second large project extends from November 15 to January 15, and is a geographical project dealing with 'our country.'"

I should like to tell you about the power of the students over discipline even in the lower schools, about the student clubs, about the great enthusiasm of the students, even about the failures of the system, and about many other things on which the Russians are experimenting, but time forbids.

Time also prevents me from commenting at length on the experimental phases of secondary education and higher education, but I do want to say a word or two about the general procedure in the universities. Again, I shall read directly from my notes as they were made while in the University of Kiev.

"Seminar method is used almost entirely. Questions by the student to the professor, lectures and reports by the students, lecture by the students on the course at the end of the year. The student does practical work in his subjects during the school year.

"In most fields, a year of practical work and examinations on the practical work are given and the diploma is not awarded until the end of that year. All government plants, industries, and operations must take students during the summer up to 2 per cent of their total employees. The committee of students decides where each student will work during the summer. The students and professors are on an equality in class and out."

It is far too early to try to appraise the results of this new attempt to educate a whole people. Such it must be considered because of its extensive system of factory schools and provisions for adult education and other experimental features. We were told that, in this one school district of which I have spoken, of the 1,500,000 people, there were now only 125,000 illiterates, and the plan this year called for teaching 20,000 of these, leaving 105,000 illiterates at the end of the year.

The schools are supposed to prepare definitely for the economic needs of Russia. The Central Planning Commission has decided in what order the economic resources of the country are to be developed and the schools must have the people ready to do the work. The student is given guidance and help in choosing his vocation, and is supposed to be free in doing so. If it is possible to combine the freedom of the student with this plan of the Central Planning Commission, it will indeed be a great achievement.

Many new things are being tried in the educational world of Russia. We object emphatically to Russian economic policy but it is not unreasonable to think that Americans could profit by some of their educational experiments if they were studied with that purpose in mind.

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Improving the Computative Abilities of Pupils in Grades 1 to 8

JOHN GUY FOWLKES, Professor of Education, University of Wisconsin

I HAVE been asked this afternoon to talk on the improvement of computative abilities in dealing with integral material, of children from grades 1 to 8. I wish it to be understood that the nature of my remarks shall be those of observation in terms of a rather careful perusal of experimental evidence that is available, coupled with the tendencies and the viewpoints of hundreds of people like yourselves.

I should like for you to think with me this afternoon on the subject of the improvement of computative abilities of children in grades 1 to 8 with respect to the following elements: The nature of computative abilities, the content of computative abilities, the acquisition of computative skills (under two heads which I shall indicate later), the fixation, perfection, and maintenance of computative abilities, and individual *versus* group instruction.

Before any attempt is made to enter into the discussion of the subject assigned, I shall indicate some of the purposes and goals of modern education that have been established in the last few years. It may legitimately be said that all educational institutions are attempting to do one or all of the following things:

1. The establishment and maintenance of desired attitudes.
2. The mastery of subject-matter (partial and complete).
3. The acquisition and development of skills (manual and mental).
4. The ability to use 1, 2, and 3 in problem solution.

In other words, the first fundamental consideration of education is the change of human nature around the elements we continually describe as personality or character. The word "ideals" is not included here, not because the deliberate development of ideals should be neglected, but because ideals are evidenced only by the attitudes that people reflect.

The second broad function of education may be stated as the mastery of subject-matter, either partial or complete. Complete mastery of subject-matter is evidenced at once, but the partial mastery of knowledge may not be quite so clear. The partial mastery of subject-matter as a legitimate function of an educational institution is often just as important if not more important for successful living than complete mastery of subject-matter. There are many things we want to know about rather than to know. For example, I know *about* the atomic and molecular theories of motion and matter, but as to knowing the technical details of those things, I have not mastered them. As an appreciative citizen, however, I must know something of those fields. In institutions of higher learning in the past, the complete mastery of knowledge has been separated and isolated from all other activities, and has been the sole objective of such institutions.

The third general function of education is the acquisition and perfection of skills. Skills that are considered in schools are of two kinds, namely, mental and manual. There has been somewhat of a general tendency among classroom teachers to assume manual work as the only kind of skill that should be developed in schools, and to confuse mental skills with personal habits. The highest aim of eductation is the development of the ability to use 1, 2, and 3 in problem solution. You will notice that I have chosen the words "development of the ability to use 1, 2, and 3 in problem solution" because I firmly believe that there lies latent in every human being the ability to use knowledge either partially or completely mastered in problem solution.

With this background as a working basis, the question of the nature of computative abilities becomes evident at once. The abilities to add, subtract, multiply, or divide are certainly acquired rather than inherent or native talents. Consequently, we may immediately say that computative abilities in human beings at any mental level are elements that must be acquired rather than elements that are inherent. Then, the next thing that confronts us in considering the ability to add, subtract, multiply, and divide is the content of these computative abilities. Either we accept the psychology of associative bonds to a fair degree as some of our eminent psychologists claim, or it doesn't make much difference just what work is done in developing the ability to "figure." In the light of existing data it seems to me that we can, with a high degree of reliability, assure ourselves that the abilities of the children in the fundamental operations are isolated rather than unified affairs. Consequently, the first task we have at present is that of deciding which combinations we want the children to master and then the levels, points, or grades at which we want such masteries to occur.

Passing on from the nature of computative ability and the superficial observations of the content of such ability, let us turn to the acquisition of these abilities with respect, first, to the time of introduction, and, second, to the method of introduction. It has been rather generally agreed that formal arithmetic should be postponed until the third grade. However, within the past few years, particularly the past two years, "A Committee of Seven" in Illinois, headed by Dr. Washburn, has been carrying on a good deal of experimental work pertaining to the desirability of introducing arithmetic as a formal subject in the second grade with much more intense work on the number concepts and so-called essential combinations in the first grade. Frankly, from the data I have seen so far, I see very little justification for the introduction of arithmetic in a formal fashion in the second grade. The experiments that I have studied seem to have ignored certain advantages in general reading and vocabulary abilities which do occur with the postponement of arithmetic as a formal subject to the third grade. The time of introducing arithmetic with respect to individual children, either with regard to the grade in which they are enrolled or to the chronological ages, seems to make little difference. The precocious youngster is going to pick up what he can anyway, and anything that is done in an informal fashion is well and good. It seems clear at present that the third grade is the most advantageous point of introducing arithmetic as

a formal subject. This in no way implies that work on number concepts should not be done before this, but I do feel that the third grade rather than the second is the place for introducing arithmetic as a formal subject.

Let us now consider the methods of introducing the number combinations. Immediately we are precipitated into a rather interesting dispute in the field of educational thought touched upon by Dr. Clark. Some people contend that nothing should be taught as separate subject-matter, but that all units, as far as subject-matter is concerned, should be taught in a so-called social situation or life setting. Some of our educators say that children's desires or wishes should be the criteria by which we introduce subjects in the elementary school! Frankly, such a viewpoint seems decidedly out of balance. Certainly boys and girls should be interested in what they are doing in arithmetic. Certainly arithmetic should be incubated and born in terms of life needs. But life situations in arithmetic should be natural and real, rather than forced and artificial. There is as much danger of over-formalizing and thwarting in socialized schemes as in any other scheme, and it must be remembered that too much of anything is undesirable.

Also, as very ably stated by Dr. Clark, in this country we have not organized our thought or our lives on a group basis. We are individualistic in our national and local philosophy. Your life, my life, our lives, are not made up of large connected affairs, but rather a multitude of small events. Consequently, in light of these facts, the utilization of the socialized method in arithmetic should be in terms of small realistic units rather than attempting to link everything together with respect to teaching the combinations. There is no evidence in any way to vindicate the abandonment of specific drill on the individual combinations as such. If the right approach is made to boys and girls by means of employing individual records, by building up the morale of boys and girls so that they sense a thrill of satisfaction, much so-called formal practice will not cause sleepiness, or boredom, but rather will produce the same sort of exhilaration that comes when human beings know they have done something well in the terms of their ability.

An attempt has been made so far to call your attention to the time of introduction and methods of introduction with reference to the acquisition of computative abilities. Let us pass on, then, to the fixation, perfection, and maintenance of these abilities, first, with respect to time, and, second, with respect to method. On the basis of classroom experimentation together with the advice of the best classroom teachers it seems that grades 3, 4, 5, and 6 should be periods of fixation, rather than perfection with respect to adding, subtracting, multiplying, and dividing. In other words, after the component combinations in the fundamental operations have been learned by boys and girls in grades 3, 4, 5, and 6, more attention should be paid to accuracy rather than speed. I do not wish to leave the impression that speed standards should be ignored or abolished in those grades, but I do contend that there is a danger of over-emphasizing hair-splitting nominal time standards at the expense of accuracy, thereby impairing and inhibiting the accuracy of

computative skills in grades 3, 4, 5, and 6. Grades 7 and 8, the first two years of junior high school, are evidently the best times for stressing speed. With respect to the best and proper methods of fixing and perfecting computative skills, the same truths seem evident there, as in the acquisition of such abilities, namely, that problem and socialized work must be combined with formal, abstract drill if the degree of efficiency in the fundamental operations that we as classroom instructors demand is to be attained.

Turning to the last item for consideration, namely, individual *versus* group instruction with respect to computative skills, the "middle road" policy seems to be the best. Under our present scheme of organization, it is the very rare or exceptional school that can turn to the individual basis of instruction. Most of us for some time to come will be associated with schools that have class organization. Consequently, a certain amount of group instruction and practice alike is an indispensable procedure in the fixation of computative skills. The group instruction may probably be best arrived at by limiting or confining class drill or practice to the needs of the top 10 per cent or 20 per cent. In drilling a class as a whole, it probably is highly inefficient to treat the class as a unit when as many as from 10 per cent to 20 per cent have already mastered the combinations involved. Likewise, it is inconsistent to assume that conditions as shown by group measures will serve in any way as a guide for assigning practice to individual boys and girls. I was in a classroom in California where the teacher was drilling the children on the combination 7 plus 8. When I asked why she was stressing this combination more than any other, she informed me that it had been discovered in New Jersey that that combination was particularly difficult. I asked her if it had ever occurred to her that she might give the basic hundred addition combinations to the class in an effort to learn whether or not the difficulty encountered by her class was the same as that experienced by the New Jersey group. Her answer was that the difficulty of the combinations had already been fixed! That is sheer rot! And yet many of you have been guilty of that very same thing. We can set up classes of difficulties in terms of thousands of pupils, but as yet we do not know the difficulty of combinations for individual pupils unless each pupil is thoroly diagnosed. I do not see how this will ever be different. We may be able to tell the 10 or 20 hardest combinations, but not each combination separately.

I have tried to suggest to you that computative skills and abilities in grades 1 to 8 must be acquired and maintained rather than considered as inherent and innate; that in considering the content of computative ability in grades 1 to 8, we should definitely assign particularly chosen groups of skills for the various grades; that boys and girls, in acquiring the abilities to add, subtract, multiply, and divide, learn these things best after they are begun in the third grade in both abstract and concrete fashion, in terms of big and small situations; that the methods of both group and individual instruction must be employed; and that we must be interested in and particularly concerned with efficiency and accuracy in the first 6 grades, reserving the seventh and eighth grades for a drive on speed as well as accuracy.

Moot Questions in the Teaching of Handwriting in the Light of the Scientific Evidence

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WE are in the age of the science of education. Science is being used for the investigation of all types of problems. Some thinkers protest against the application of the scientific method to the study of the ends of education and would confine it to the means by which these ends may be secured. This, however, is an artificial distinction. The only limitation upon science is the limitation which is set by its present technique. It is as well adapted to the determination of ends as to the determination of means. The sphere of its application is continually widening as its methods are developed.

There is a distinction in the use of science, however, which I should like to emphasize. In the true use of science, it serves us as a means of discovering the truth about any problem and the best means of proceeding in the solution of the problem. When used in this way, science serves as a true guide to conduct. We resort to science with our minds open and ready to accept any verdict which it may offer. In the other method, which is too often pursued, science is resorted to, not to furnish a guide to conduct, but to furnish the justification of the conduct upon which we have already determined. This is the prostitution of science. Science when used in this way may be an instrument of evil rather than an instrument of good. The advocate of every procedure now feels that he must use the language of science and must justify his procedure by appeal to scientific facts or laws. Science, in order to be of service to educational practice, must be used as a genuine guide and must not be merely dragged in to support the opinion or practice upon which one has already determined.

The practices in the teaching of handwriting have frequently been without adequate scientific foundation and have sometimes been directly contrary to the implications of the scientific fact. This is true of all the subjects and all the practices in education, but it is particularly true of handwriting. For a long time, those who have been in charge of handwriting instruction have paid little attention to scientific experimentation. Some of them in fact have been contemptuous of it.

I may cite two examples of practices in education which have been without adequate scientific foundation. The first of these is the introduction of vertical writing. The case of vertical writing illustrates our habit of going from one extreme to the other. Before vertical writing was introduced, it was unknown in this country. The use of slanting writing was the universal practice. Vertical writing came to this country from Europe supported by the arguments of physiologists and hygienists. After a period of agitation, the school authorities in this country were

convinced of the merits of vertical writing and adopted it almost universally. In the nineties, vertical writing swept the country. After a few years of trial, it was abandoned almost as rapidly as it was adopted and within a few years hardly a trace of it was left.

Vertical writing is an example of a practice which was supported by considerable scientific evidence. The advocates of vertical writing in the beginning were sincere. It had been demonstrated that the extremely slanting style of writing as it was ordinarily taught was injurious to the children because of its extreme slope and because the paper was tilted so far to the left. The children sat with one side to the desk. This caused one shoulder to be raised higher than the other because one arm was supported and the other not. The sideward position also led the writer to twist his head and caused a strained position of the neck. This position also induced eye strain due to the fact that the eyes were not the same distance from the text that was being written and the movements of the eyes were oblique.

These are all scientific facts and they are as true today as they were in the early nineties. The only difficulty in the reasoning of the advocates of vertical writing was that they overlooked certain other facts which later scientific study has revealed. Vertical writing, it is true, tended to induce good posture and it produced a style of writing that was relatively legible. The difficulty was that it led to an awkward type of movement. The writing movement may be divided into two phases. One phase is concerned with the formation of the letters, the other phase with the movement of the hand along the line. In vertical writing, the movement of the hand along the line is awkward simply because the line across the page is not perpendicular to the forearm, and it cannot be made, therefore, by swinging the forearm around the elbow. The arm has to be drawn back as the hand proceeds along the line. Vertical movement was discarded, then, not because it did not rest upon scientific fact, but because while supported by some scientific facts, it was contrary to others.

As my second example, I shall take a practice which is also in conformity to certain scientific facts but which violates others. I refer to the extreme form of arm movement drill. Arm movement drill did not, like vertical writing, originate with scientific investigators. It grew up, rather, among the practical teachers of handwriting. It was a discovery or invention which probably originated in trial and error procedure. It proved to have certain decided merits and it became the standard type of handwriting to be taught in business colleges and then in the public schools. Scientific experimentation has shown that the arm movement drill has certain merits and also certain defects. What the merits and the defects are, I shall describe at more length in a few minutes. The point I wish to emphasize here is that the extreme form of arm movement drill grew up as a practical discovery or invention. As a consequence of its origin, those who practice it have frequently resisted any attempt to subject it to scientific study and have used science, when they have used it at all, only to find support for their favorite procedure.

I have chosen for the main part of my discussion the application of science to four problems in the teaching of handwriting. I have selected these problems because, in the first place, they are moot questions. Opinion and practice are divided concerning them. I have chosen them in the second place because there is some scientific evidence upon these issues and I believe that this evidence is of material assistance in deciding them. The four problems are: first, the grading of handwriting, or its adjustment to the characteristics and requirements of children of various ages; second, the best movement to be used in writing; third, the best method of dealing with the left-handed child; and fourth, the merits of manuscript writing.

The grading of writing touches a number of important items of practice. These may be described briefly. In the first place, we have the approach. One method of approach is to deal with writing first as a form of mechanical skill, and second as a means of expression. When this approach is used, the early practice is devoted to the acquirement of mere skill of hand and the ability to make certain marks on paper. The ability to use writing as a mode of expression is deferred until after considerable drill has been undergone. By the other mode of approach, writing is treated from the beginning as a mode of expression and skill of movement and of production is allowed to develop gradually.

In the second place, writing may be graded in different ways as to the content or the subject-matter. Care may be taken to adjust the subject-matter to the understanding and the interests of the child, or such adjustment may be neglected.

In the third place, grading concerns the style of writing. When children write naturally, the style of writing in the first two or three years is quite different from that in the later years. This is because the writing in the early years is somewhat more of a drawing process than it is later on. A neglect of this fact results in the effort to impose upon the primary child exactly the same style of writing as is used by the adult. Along with style goes size. Children in the early grades may be encouraged to write a large script, or they may be taught to write small script like that of their elders.

The next characteristic is movement. The effort has frequently been made to teach the primary child from the first grade up exactly the same kind of exclusive arm movement which is used for adults. The theory behind this practice is that the movement should not vary from one stage to another. The type of practice may be the same from grade to grade or it may be adjusted to the level of the child in the successive grades. This touches such matters as the amount and kind of drill which is used and the aim which is set before the child.

The considerations which underlie the practice of grading handwriting are partly physiological and partly psychological. There is probably a close inter-relationship between the physiological and the psychological fact. Consider first some of the facts concerning the child's physiological organism. It has been demonstrated beyond question that the child possesses much less skill of movement than does the

adult. He not only lacks the ability to perform specific movements, but he is relatively deficient in the control of movement in general and the ability to acquire new acts of skill. His movements are less rapid, less precise, and less steady than those of the older person. Added to this is the fact that he is more easily fatigued by activities requiring precision and careful attention.

On the psychological side, there can be little question that the primary child has different attitudes and interests from the child in the intermediate and upper grades. This difference may in part be due to the immaturity of his bodily organism, or it may be partly due to the limitation of his experience. The cause is immaterial. In general the child in the first few grades is interested in objects which have meaning rather than in symbols. He is interested in the concrete rather than the abstract. He is interested in wholes rather than in parts. He is interested in the results of his act rather than in the perfection of the act itself.

All of these facts taken together with the physiological facts have a distinct bearing upon the grading of writing for young children. Their bearing upon the particular features of grading is fairly obvious and I shall not take time to point it out in detail.

The second problem is concerned with the best movement to be taught in the school. Experimental investigation has shown that arm movement drill which grew up out of practice of teaching has certain merits. One of its merits is that it brings about a smooth adjustment between the movement by which the letters are produced and the movement by which the hand is carried along the line or across the page. This adjustment is inherent in the arm movement style of writing because the production of letters and the movement across the page are both produced by the same action. In the second place, the arm movement style has the merit of producing a rhythmical movement. By a rhythmical movement in handwriting is meant one in which the successive strokes are made with a rather rapid swing or sweep and the strokes are separated at the points where the direction changes abruptly by slight pauses or retardation in the speed. The rhythm is not exact as it is in the case of music or dancing in the sense that each act is performed in the same unit of time. The time units for the successive strokes vary somewhat because the strokes vary in length and in complexity. However, there is a tendency for the different strokes, even tho they do vary in this way, to be made in somewhat the same length of time. The arm movement style, then, produces a rhythmical writing and a writing in which the movement on the letters and the movement across the page are well coördinated. These facts have been clearly demonstrated by the use of motion pictures in the study of the handwriting movement.

Experimental investigation has also shown another fact about the use of the exclusive arm movement. This fact is that very few persons use it. In the lower grades, practically no children use the extreme form of arm movement; and even at the end of the elementary school, after eight years of continuous drill, a large proportion still use a con-

siderable amount of finger movement. Most adults, even those who have been trained in the arm movement method, use a greater or lesser amount of finger movement. Experimentation has further shown that, provided adults write rhythmically and carry the hand smoothly across the page, there is little correlation between the amount of arm movement which they use and the excellence of their writing. Experimental investigations, therefore, indicate that arm movement, or so-called "muscular movement," is not suited to the child in the primary grades and that if it is taught at all, it should not receive the extreme emphasis which has often been given to it. Attention should be directed to smooth and rhythmical coördination and to exercises which will produce these results. Furthermore, greater attention should be given than has frequently been the case to the form of the writing. The letters and words should be more compact, more carefully formed than has sometimes been the case when exclusive or main attention was given to a particular style of movement.

I have chosen to discuss left-handedness because in spite of the rather conclusive scientific evidence concerning the treatment of the left-handed child, there are still many persons who disregard this evidence. Within two weeks, I have been informed of two instances in which children were compelled to use the right hand in spite of the fact that they were apparently strongly left-handed. In one of these instances, there was a marked detrimental effect upon the child's speech. This case was first reported to me as one of stammering. Upon inquiry, I learned that the child was left-handed and was compelled to use his right hand in writing. I thereupon suggested that as an experiment the child be allowed to write with his left hand. The next report was that this advice had been followed and that the child immediately began to improve in speech.

This is only a single instance of many that have been reported in the scientific literature. Some of the studies of the relation between handedness and defect of speech have failed to discover a connection between them; but the studies in which such connection has been shown have been sufficiently convincing to compel our attention. The most extensive of these is a study by Ballard, who found that about 17 per cent of the children who are left-handed and are compelled to use their right hand in writing suffer from speech defects. This is to be compared to 3 or 4 per cent of children in general who have speech difficulties. This statistical study is backed up by many individual instances of the sort which I have mentioned. I recently talked with a teacher of penmanship who is the only woman to receive the highest award for skill given by one of our prominent schools of penmanship. This woman writes with her right hand but is naturally left-handed. She told me that while she does not have an actual speech defect, she frequently suffers a slight hesitation of speech which she attributes to the fact that she uses her right hand in writing.

It is not necessary to go into the physiology of this question, since it is largely a matter of inference or speculation. It is known, of course, that the speech center is on one side of the brain, in most

persons in the left hemisphere. It is, of course, known also that the right hand is controlled by the motor centers in the left hemisphere. From this fact it may be inferred that there is an intimate connection between the speech processes and the motor adjustments which control the right hand in writing. In the case of the left-handed person, it has been supposed that the speech center is located in the right hemisphere instead of in the left. This may be the explanation of the observed fact. It is the observed fact, however, and not the physiological explanation of it which supports the practice of allowing strongly left-handed children to write with their left hand and not forcing them to use their other hand. To force all children regardless of a strong preference to the contrary to use the right hand, or to penalize them if they do not, is, in my judgment, serious educational malpractice.

The current issue which is uppermost is the question of manuscript writing. Manuscript writing is a style of writing which was used by the scribes of the Middle Ages before the invention of printing. It was the style of writing which was used in the production of permanent manuscripts. When books were printed rather than written and when writing came to be used for temporary means of communication, the style of writing grew up which we now know as cursive writing or as ordinary script.

Some years ago, a group of educators in England became interested in manuscript style and experimented with it in the schools. This style of writing was attractive to them primarily because of its artistic superiority. After it had been tried out for a time, certain other merits were discovered. It was found to be, in the opinion of those who used it, more legible than the cursive style. It was further reported that children found it easier to learn than cursive writing because of its similarity to print. Manuscript writing has been used for several years in a number of experimental schools in the United States and in a few public school systems. Its introduction on a large scale in the public schools has now become a practical issue. It is very desirable that this issue be decided on the ground of scientific evidence and evidence which is as complete as can be made. It would be very unfortunate to repeat our experience with vertical writing. The adoption of vertical writing and its abandonment caused two whole generations of children to go thru an upheaval in their handwriting habit. We should either refuse to adopt manuscript writing on a large scale, or, if we do adopt it, we should retain it permanently.

The first argument that is usually brought against manuscript writing is that it is slow. We have now sufficient evidence to indicate that while it is probably a little slower than cursive writing, the difference in speed is not as great as one might suppose. The comparative speed of writing has been measured by means of tests of groups of children and it has been analyzed by the motion picture method. While the motion picture analysis has not yet been completed, it has gone far enough to enable me to say that disconnected letters may be written with a movement which is not very different from that which is used in writing connected letters. That is, it is possible to lift the pen and

put it down again with about the same speed with which one carries the pen across the paper.

Concerning the relative legibility between manuscript and cursive writing, while our evidence is not as yet very extensive and needs to be made more complete, the indication seems to me to be that manuscript writing is considerably more legible than cursive writing. This may be due to the fact that the letters, being separated, are more distinct, and to the fact that in writing separated letters, one's attention is attracted more sharply to their form than when they are connected.

The question which has not yet been investigated is the effect of the two styles of writing upon the movement coördination. It will be remembered that this is the difficulty which was found with vertical writing. Investigations on this point have been started, and I hope that before many months we shall have evidence which will enable us to judge whether manuscript writing may be written as easily and with as smooth coördination as cursive writing. We should, I believe, examine this question carefully before making up our minds upon the general merits of manuscript writing.

The historical consideration should make us cautious about adopting manuscript writing without very careful investigation. We may suppose that an historical institution arose in response to some natural demand. As Gilbert K. Chesterton has said in regard to marriage, we should not trust a person who wishes to abolish it because he can see no use in it. We should only permit one to abolish it who can see its value. One explanation of the historical origin of cursive writing is that it arose because of the needs of the copper plate engraver. The other is that it grew up as a result of the fact that it could be written more rapidly and more easily than writing which consisted of disconnected letters. The settlement of this historical issue should give us some assistance in passing upon the practical issue which confronts us.

My conclusion regarding manuscript writing is that there are strong arguments in support of it and some scientific evidence. The scientific evidence is not yet complete, however. The magnitude of the issue is such that we can afford, in my judgment, to proceed somewhat deliberately in the matter. It is not a matter of the greatest importance that one or two sets of children should learn cursive writing rather than manuscript writing. It is a matter of the greatest importance, however, that two generations of children should not have their habits of handwriting disrupted and reorganized. The educational profession should wait until sufficient evidence is in, choose deliberately, and then adhere to the decision.

How Can the Supervisor Be of Help to the Elementary Teacher?

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I AM glad that this discussion is to be on the subject of how the supervisor may help the teacher. We are, I believe, prone to overemphasize the importance of *judging* our teachers, of placing some *grade* upon them. While the duties of the supervisor are twofold, improvement of teaching should have the major share of her attention. Dr. R. W. Harris, in his study of supervision in 160 fairly large cities of the United States, reports that the function of the supervisor is conceded to be mainly that of improvement of teaching, with evaluation of the teacher's work a secondary consideration. The supervisor is the officer most responsible for the quality of the teaching in the schools.

The term "supervisor," as we shall use it, refers either to the critic in the training school or to the supervisor in the field. While the duties of these two persons differ in many respects, the principles which underlie the improvement of teaching are common to both.

The time is rapidly passing when the need for supervision is questioned. A complicated business implies supervision, and our schools have become *very complex* institutions. Uniformity in standards and coördination in effort cannot be maintained without supervision, without someone in a position to see many angles of the teaching situation. So, also, are all types of teachers in need of direction. This does not, necessarily, imply a weakness on the part of the supervised. Miss Imboden, in an article recently published in the *Journal of Educational Method*, classifies teachers as follows: superior teachers of fine training; successful ones of native ability, but lacking in training; trained teachers of successful experience, but new to the particular system; those who are trained, but inexperienced; and poorly trained teachers who are inexperienced. All these are not in need of an equal amount of supervision, doubtless, but they must all be supervised if a oneness of purpose is to be attained.

Training for supervision has, within the last decade, received considerable attention at our higher institutions of education. Well within the memory of everyone present is the time when experience was about the only qualification above the usual normal course. In the early days, as someone has expressed it, "The business of the supervisor was to cast a genial influence over the school, but, otherwise, not to interfere with the work." To quote again, "The supervisor was a sea-captain of mediæval time, upon a chartless sea." Many charts are now available by which supervisors can find their way about in the once boundless deep. The principles of supervision have been set forth. Dr. McMurry was among the first to enumerate such guiding rules as the following:

"The supervisor must provide the teacher with a motive; must assist and direct her in organizing subject-matter; must teach the teacher to weigh relative values; must provide for and stimulate independence, initiative, and self-expression on the part of the teacher."

Dr. Bobbitt has framed very specific principles for the supervisor, as has also Dr. Gray. Teaching activities have been analyzed to such a degree that the supervisor has criteria upon which to base her judgment. Case studies, such as those made by Dr. Burton and others, throw much light upon effective methods. Lists for checking technique are becoming more objective and practicable. We should be much better supervisors than our predecessors could possibly have been.

If the supervisor may be considered a teacher of teachers, may we not assume that the supervising technique is much like ordinary teaching methods? Certain information must be given to the learner; desirable habits of work must be formed; skills must be built up; and attitudes of mind must somehow be induced. The old vagaries are fading from our minds, as are such hazy terms as "inspiration" and "influence" from our vocabularies. We are, in other words, developing a more scientific attitude toward supervision.

There are definite sources of information—surveys, investigations, experiments, tests, to which the supervisor can refer the teacher in need of information. Such problems as: "Is there a special disability in spelling?" "Just what are the steps of difficulty in multiplication?" "How accurately and how fast should a fourth-grade child be able to write?" "What habits tend to retard reading?" "What is a typical drawing for a second-grade child?" All these questions have been answered fairly satisfactorily; and every teacher has a right to be told these things if she doesn't know them.

Means for developing skill in teaching are at hand. Investigations in supervised study, in the technique of drill, in the best way to conduct a lesson of almost any type, are plentiful. These things may be made an open book to the teacher.

Suggestions for better habits of work are known to every supervisor. She is familiar with systematized routine, with the best form of keeping records and interpreting graphs. There seems, indeed, no field of supervision that has not received some expert attention.

There remains the last of the great needs of the teacher, the right mental attitude, that thing which will make the teacher want to teach well, as the greatest of the supervisor's problems. Developing attitudes is a subtle thing that *seems* to defy analysis. How can one give information to a person who doesn't know he needs it? How can skills or habits be improved if the teacher has not arrived at the stage where she knows she isn't skillful? Supervisors are often reminded that a horse can be led to water, but cannot be made to drink. The question seems to be: How can a genuine thirst be induced? Perhaps if we examine into the various contacts which the supervisor has with her teachers we may see some ways in which attitudes may be built up or changed. The laws of learning do not change with the age of the learner. One learns only under certain favorable circumstances. It

is from this fact, perhaps, that the supervisor gets the most really scientific help in her difficulty of firing the ambition, changing traditional sets of mind, breaking down prejudices. A proper attitude is a prerequisite to the reception of information, or the acquiring of skill, or the formation of new habits.

Let us examine into the various contacts which supervisors have with their teachers in order to determine how attitudes may be built up.

Dr. Morrison, of New Jersey, finds these contacts to be much the same in all situations. They are, he observes, the personal conference; teaching lessons for the teacher; intervisiting; directing the professional study of the teacher; holding group meetings; arranging for demonstration lessons by the teachers; and tests and measurements of results of teaching. To these points of contact may be added: placing helpful literature in the hands of the teacher; giving expert assistance in providing better physical conditions under which to work; assisting in proper placing of children in groups; the proper placing of the teacher herself in the system; self-rating sheets by which the teacher may know standards; and assistance in semi-teaching jobs.

Shall we consider for a moment the visit of the supervisor? Incidentally, let us call it a visit, not a visitation. Doubtless we have all heard the distinction made by the father to his inquiring son. "When you visit your maternal grandmother," he explained, "that is a visit; but when she comes here, that is a visitation." An unostentatious, professional visit is one of the best means of getting good attitudes. Dr. Nutt gives us an amusing description of the stagy entrance of the old-time supervisor into the schoolroom. He suggests that, as mere diversion, there might be funnier things that are not quite so expensive. The modern counterpart of the old school trustee expects the children to rise and say, "Good morning, Miss ————," and lets one child run and get her a chair while she indulges in a pleasant chat with the teacher, and otherwise disrupts the thing she has come to see, a normal teaching situation.

One hears considerable controversy as to whether or not the visits of the supervisor should be prearranged with the teacher. Many arguments seem to point to the conclusion that this is wise. It prevents too many visits to the same teacher in a day. The supervisor, moreover, wishes to see her teachers doing their best teaching. She wishes to see a situation in which the teacher has thought carefully thru the problem. Otherwise, there can be very little ground for discussion of procedure. Visits in response to requests from the teachers would seem advisable in some cases. Such procedure would surely promote professional spirit. One cannot always be at the height of one's skill, altho the general level of ability can be raised. Nothing, of course, can as quickly destroy all coöperation as a suggestion of surveillance, once so commonly the attitude of the supervisor.

Can a supervisor successfully participate in the lesson she is observing? I believe that depends on the supervisor and the situation. Any reflection on the work of the teacher must, of course, be avoided. Such a situation is as unethical as the criticism of one parent by the

other in the presence of the child. If, however, the supervisor can participate in the lesson by a natural question, or if she can manage skillfully to make a good conclusion when she sees that the teacher is about to omit one, then her action seems more than justified. A dead silence on the part of the supervisor is sometimes very disconcerting to the teacher and chilling to the children.

Should the teacher take notes as she observes? I see no reason why she should not. It is exceedingly difficult to recall helpful instances of good or poor technique after a lesson is over. A criticism, without sustaining evidence, does not bring about the attitude we are so concerned in establishing. Taking notes should not annoy the teacher if she understands, as she soon will, that they are as likely to be commendatory as condemning.

There are many kinds of blanks which have been devised for recording improvement in procedure. Those which have been worked out by Messrs. Anderson and Barr and Miss Bush seem to me somewhat too detailed and over-refined. Many check lists are, on the other hand, too vague and subjective. Such a list as that suggested by Dr. Wagner appears so, for example. There are items like the following:

Results observed: Excellent
Satisfactory
Improving
Unsatisfactory

Conditions for work: Favorable
Unfavorable

The above points are, of course, to be checked by the supervisor. I should imagine that, after the visit was over, the supervisor would forget what made the conditions unfavorable or why he considered the results unsatisfactory. Miss Rose Carrigan has devised a sort of cumulative system of rating by which she scores items on a basis of a thousand points, much as Dr. Strayer scores school buildings. She scores perhaps six times during a year, and the measure of success or failure is very objective. There is a detailed description of Miss Carrigan's card in the *Journal of Educational Method*, Vol. 2, page 48. The card is not intended exclusively for rating purposes, but largely for improvement of teaching. It was compiled with the help of four hundred principals and supervisors in all parts of the country.

Dr. Harold Rugg's *Teacher's Self-Rating Scale* is very objective and suggestive. Such a device as Dr. Barr's *Time-chart Studies*, by which a record is made of such facts as the kind of activity aroused by the lesson, the number of minutes during which there was general attention, the number of interruptions to the thread of thought, the time taken up by repetitions that were not valuable, might be very helpful to a teacher if she were given a chance to examine them before they were used. Dr. John Morrison's attention graph, if used without a prearrangement with the teacher, might be means of establishing an undesirable attitude on the part of the teacher.

And what of the nature of the conference after the visit? One often reads that it "must be tactful, unhurried, and must never come at the fag end of the day." Just when it could occur, no one divulges. I believe the teacher should receive some sort of written report after a supervisor's visit, if she is to profit much. At the beginning of the conference it seems certain that the teacher should be given an opportunity to express her ideas about the lesson which she has just taught. She should be given an opportunity to explain her objectives, what went before this lesson, and what is coming after it. The conference should in any event be a coöperative affair, a real discussion; it should concern underlying principles, not trivial details; and, I believe, it should be confined to one or two phases of work. It should result in the teacher seeing for herself the weakness or the strength of the lesson. Nothing short of that can be of real help. No one can know as well as does the classroom teacher the characteristics of the children in her room. She may not appreciate the fact that her situation is a typical one; that among thirty children, for example, there are certain to be some undesirable social types; she may not know how much is child-nature and how much is Johnnie; but she does have intimate details about the children which she always feels make her case a peculiar one. An appreciation of the difficulties under which the teacher is working brings about a better coöperation. When a supervisor has worked over tests for intelligence and has examined the children, at the beginning of the teacher's service in the school, for achievement scores, and then has made tests after the teacher has taught the group for some time, she begins to have a real basis for judgment and can do something to help the teacher see her own position.

What should be the nature of the group conference if it is to induce right attitudes? Such conferences are, of course, general or are made up of some particular group, such as teachers new to the system, or those having a certain grade. In any case the procedure must be a democratic one, calling for a maximum of activity on the part of the teachers. I believe that supervisors tend to do most of the work at group meetings, while the teachers sit passive. On the other hand a meeting in which there is random discussion is undesirable. Talking and thinking are, unfortunately, not synonymous. You will recall that Bill advised Mabel to learn to knit "so that she would have something to think about as she sat and talked."

In a group meeting, as in the individual conference, there must be some specific subject which meets a clearly defined need. Dr. Gray suggests the following topics, expressed in question form, which may be appropriate for group meetings:

In what situations have you helped children solve problems?
How can children be trained to get ideas from the printed page?
What are some good sources for reference material for social studies?
How do you keep the faster pupils busy?
Just how do you teach long division with the least confusion of ideas?

A class of graduate students at the University of Cincinnati recently made the following list of questions which they wished discussed in a general conference:

How can drill be organized on a scientific basis?
Should compositions be rewritten after correction?
When should speech errors be corrected?

All these questions show an eagerness on the part of the students for an analysis of their difficulties. No one asks for "inspiration," as such. Some other topics that I have found helpful are:

How can one grade a small group of pupils in those subjects in which we have no appropriate standardized measurements?
How have you managed to keep a center of interest about which most of your pupils' activity has been grouped without sacrificing so-called "fundamentals"?
What are some of the best map studies you have had this year?
How do you motivate your writing lessons?
What is the purpose of the chosen-occupation period, and how do you conduct it? How free should it be? What sort of records can be kept of it?

The discussion type of general meeting may seem a long way around to a conclusion, but it seems to be the only sure way to growth. What if the contributions are crude? They are just as crude as the teacher's thinking. One grows thru expression, and it is the teacher for whom the meetings are held. At the end of the discussion the supervisor may recommend some helpful reading, or describe some investigation that will help to solve the difficulty. Dr. Buswell's investigations in the field of publications on arithmetic might solve dozens of questions. Such a meeting would tend to professionalize a group of teachers, and would, I believe, foster an attitude of independent thinking, perhaps some experiments. The old question-box idea does not seem to work well. It usually gives rise to somewhat trivial discussions, unless the questions are handed in some time before the meeting and are organized by the supervisor. Voluntary attendance at some meetings might improve the attitude of the teacher.

Are demonstration lessons, conducted by the supervisor in the presence of the group, usually profitable? In the training school, certainly. There the critic knows all the children intimately; they are in their own room and there is no audience but the teacher. In the case of lessons by the supervisor, however, I do not recall that the few I have seen have been very successful. The situation was strained for everyone, the children were petrified, and those situations which the supervisor hoped would occur were absent. If the supervisor has visited a group several days in succession, and the teachers can be so seated that the children are unconscious of them, such a demonstration ought to be most helpful if a discussion can follow.

As a rule, a demonstration lesson, taught by one of the teachers who is especially skilled in some bit of technique, is wonderfully successful and helpful.

An informal exhibit of materials is a profitable thing. Charts for teaching beginning reading, plans covering certain units of work, and factual reading materials that have been typed and mounted for class use are very worth-while passing around and may inspire some unoriginal teacher.

Intervisiting is rather infrequently practiced, it seems. I have often wondered why this was the case. Almost any teacher would be glad to pay for the services of a substitute for half a day occasionally for the sake of such visiting. I recall very distinctly the lessons which I saw given by other teachers while I was teaching in the public schools. I once visited an expression class in Gary, conducted by a teacher with real ideas. I still can picture the children of all ages coming into the room, taking from the large jar the amount of clay they needed for their models, carrying it to some place in the room which suited their needs, and proceeding to model. The atmosphere was that of a studio. informal talking was the natural thing, and interference with other people's rights was not in evidence. The results, moreover, were most interesting. Surely this was more helpful to me than many lectures.

Self-rating lists may be made a source of better attitudes, since they demand self-analysis. They are especially helpful if they are so arranged that the teacher can rate herself several times during the year on the same sheet. In that case, she will be confronted with the fact that she has rated herself so high on the first rating that there is no room for improvement and she will begin to question her early ratings. After the teachers have grasped the idea that a low rate will not prejudice the supervisor against her, we find ratings much more profitable. If there are certain points in teaching and in personality that count for or against a teacher, it seems only fair that she should know what they are.

And now we come to the question of the lesson plan, a moot question indeed. Investigations such as Dr. Garrison's, in his recent dissertation at Teachers College, find that all training schools require some kind of plans, but that there is a wide variation in the type. Some schools ask for a general outline only, covering a unit of work; others require a daily plan in detail; while still others have both. The Detroit Teachers College has worked out a scheme whereby the supervisor talks over with each teacher the exact status of the work already done in the grade in each subject, and helps to set goals for the term the student is to teach, representing a third of the course of study for the year. This plan is usually put in chart form and hung on the wall. Then, as the work is accomplished, the items are checked off. No daily plans are handed in, I believe. I often feel we plan too minutely and not enough in the large, and that we fail to check up achievement. For a year I tried having the students put the achievement in writing at the end of each plan, after it was taught and before the next plan was written. This made it very hard for me to keep up with the plans, but did, I think, help the girls to see results. I have also tried exempting the better students from detailed plan-writing, having only a general outline during the last few weeks of the term. This left me freer for

things I felt were more worth-while, and certainly more inspiring to a teacher than plan-writing. If objectives are clear, can technique go very far wrong? Plans do so spoil the spontaneity of the work in the classroom. A sudden turn in the interest of the group may utterly change the activity. Under a spontaneous interest, fine motives may be developed for oral composition, for reading, or for writing. Since a real interest and an audience situation are the essentials of oral composition, plans are very difficult indeed to manage. Nature study defies all planning, except to have the information at hand and to go out in search of whatever may be found. A day may bring a change in the weather that will make the plan unusable, or a turtle may walk in at the door, or someone may bring a box of bats. A good nature study teacher seems to be one who can change her plan at a moment's notice and have information and skill constantly up her sleeve. A course of study is not a succession of topics; it is well-conceived objectives; it is a scheme for growth—and growth is a spontaneous thing. One may argue that a critic teacher must know what is going to happen in a class. This is true in the main, but one never really knows the details because the questions of the children cannot always be anticipated. I recall an instance. The teacher was describing pioneer conditions in the Middle West and the children asked what people had to split rails for. Whereupon the young teacher said, "Why, for the train to run on, of course." Doubtless any undertaking, to be successful, must be planned for, sometimes very minutely but at other times flexibly. Dr. John Morrison's idea of a general plan for the science type of teaching, in which there is a series of lessons including an introduction, a pre-test to discover the present knowledge of the group on the subject, a lecture by the teacher to open up the possibilities of study, a number of supervised-study periods of rather independent work, a series of talks by the children to the class to tell what each one has found on the subject, and an organizing of the entire body of facts by each child into a continuous whole, has many possibilities as a general guide, without any undue restraining of spontaneity of the children. The idea has been particularly helpful to me.

How can the supervisor use the results of a standardized test to establish right attitudes in the teacher? How frequently tests are made, the results compiled, graphs made for some administrative purpose, and the material put away under lock and key, without the classroom teacher having any opportunity to diagnose her difficulties in the light of the children's failures, or to know that she has gone well over the top and does not need to plan remedial work in some of her subjects or in one phase of a certain subject! I feel that nothing tends more to professionalize a teacher's work than the right interpretation of tests. They also help the teacher to know the nature of a good examination, and whether or not she is overweighting certain types of information, or neglecting reasoning processes. The supervisor can also be of wonderful help to her teachers by having the intelligence testing done early in the year so that grouping within the grade may be homogeneous and the atypical case may be placed in the proper place.

The training of the young or inexperienced teachers in what may be called "semi-teaching jobs" is most helpful to them. This is usually peculiar to practice teaching. I have sometimes listed those things which authorities agree every teacher should be able to do and have them put it up to the students to learn to do them. Of course, such investigations as Dr. Charters' have raised a question as to whether or not some of those skills may not be "picked up" without special training, but I imagine that the "picking up" process is more difficult than supervisors imagine, and that these difficulties often cause a young teacher much serious trouble. Some of the techniques which a teacher needs before she gets into the field are: making out requisitions, the care of the room, keeping a roll, making sets of drill materials for arithmetic, making factual reading materials that are usable for children, mounting and filing pictures and other materials, and examining the possibilities of the city library for all sorts of helps to teaching. Of course, all these things come into practice teaching, provided each student is given a chance to teach each subject, but this is not usually the case. The Detroit Teachers College arranges for each teacher to teach for two periods. During the first of these periods, semi-teaching work only is learned.

Tying up practice with theory is one of the greatest helps a supervisor can give to her teachers. We are all impressed with the closed compartments in which students keep their ideas. There are, to the teacher, three possibilities for action when she is confronted with a new procedure. She may apply what she has learned of theory. She is more likely to proceed as she has recently seen her critic teacher do. But she is most apt to fall back on methods she observed when she herself was a pupil in the schools. These early experiences are most vivid and abiding. Because of this fact, all kinds of specters arise to the astonishment of the supervisor. Antique types of procedure, such as symbolic games, meaningless drill, or other devices are altogether unjustified by newer methods. The supervisor needs to have almost super-human patience with this sort of reversion and to remind herself that it is only natural. A few weeks ago one of my students proposed to teach a lesson in arithmetic which overlooked several serious subtraction difficulties. When I talked over the plan with her, she produced a perfectly good notebook with all the steps of difficulty worked out. I asked her where she got it and she laughed and said: "I've had it all along. My instructor in the College gave them to me. It never occurred to me to use them. I had forgotten all about them."

I wonder, too, if supervisors could not help a little more by placing the teacher where she can do her best work, among children she can understand, or in work that brings out her best abilities. We may, also, be of great help to our teachers by advising with them about professional study in summer, or by arranging for leaves of absence or for home-study courses.

In conclusion, there are certain skills to be developed, certain habits of work to be fixed; there is a body of information to be given to the teacher with whom we work; but there is, first, the necessity for estab-

lishing those attitudes which will make the student want all these other things. She must have an attitude of analysis toward her experiences by which she will capitalize them; the attitude of independence which will make her drive ahead; a professional spirit toward teaching which will make her respect scientific procedure; and a real feeling of coöperation toward her supervisor.

These attitudes are in turn brought about by definite procedure on the part of the supervisor. Such a procedure must provide for:

Constant encouragement for the teacher.
Forward-looking, constructive criticism.
A willingness to overlook nonessentials.
The habit of being specific, avoiding vague generalities.
An appreciation of the personality of the teacher, of the fact that youth, alone, is a great asset.
An appreciation of the strain of classroom work.
A control thru big, outstanding principles, rather than thru minute instructions.
Remembering always that it is easier to tell how to do a thing than it is to do it.